

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Rine et al.

Serial No. Not yet assigned

Filed: Herewith

For: *AFC1 and RCE1: Isoprenylated CAAX  
Processing Enzymes*

Group Art Unit: Not yet assigned

Examiner: Not yet assigned

Attorney Docket No. B96-021-6

This application is a CON of 09/165,460, filed  
on 10/2/98, which is a DIV of 08/902,774,  
filed 07/30/97 and claims benefit of  
60/023,491, filed on 08/07/96.

INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. §1.97 (b)

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Commissioner,

In accordance with 37 C.F.R. §1.56, this Information Disclosure Statement is being submitted for the above-referenced application.

Applicant requests the Office to consider this Information Disclosure Statement under 37 C.F.R. §1.97 (b). Accordingly no fees are due for consideration of the items listed on the attached 1449 form.

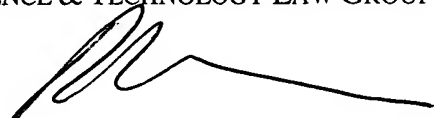
If the Examiner would like copies of any of these references, Applicants will be pleased to provide them.

In accordance with 37 C.F.R. §1.97 (g), the filing of this Information Disclosure Statement shall not be construed to mean that a search has been made or that no other material information as defined by 37 C.F.R. §1.56 exists.

In accordance with 37 C.F.R. §1.97 (h) the disclosure contained herein is not intended to constitute an admission that any patent, publication, or other information referred to is "prior art" or "analogous art" for this invention.

The Commissioner is authorized to charge any fees, if necessary, to Deposit Account No. 19-0750. (Order B96-021-6).

Respectfully submitted,  
SCIENCE & TECHNOLOGY LAW GROUP



Richard Aron Osman, J.D., Ph.D., #36,627  
75 Denise Drive, Hillsborough, CA 94010  
Tel: (650)343-4341; Fax: (650) 343-4342

# INFORMATION DISCLOSURE CITATION

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Herewith

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## U.S. PATENT DOCUMENTS

EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE
	4,997,767	03-05-1991	Nozaki et al.			

## FOREIGN PATENT DOCUMENTS

EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translation	
						Yes	No
	91 06673	16-05-1991	WO				

## OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

	Rose, M. et al., GenBank Database Accession No. Z49617
	Rose, M. et al., GenBank Database Accession No. S57140
	Rose, M. et al., Swiss Prot. Accession No. P47154
	Lye, G. et al., GenBank Database Accession No. Z49260
	Lye, G. et al., GenBank Database Accession No. S54486
	Nwaka et al., 1995, FEBS letters 360:286-90
	Sanchez et al., 1990, Science 248:1112-15

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EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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EXAMINER INITIAL		PATENT NUMBER	ISSUE DATE	PATENTEE	CLASS	SUBCLASS	

## FOREIGN PATENT OR PUBLISHED FOREIGN PATENT APPLICATION

		DOCUMENT NUMBER	PUBLICATION DATE	COUNTRY OR PATENT OFFICE	CLASS	SUBCLASS	TRANSLATION	
							YES	NO

## OTHER DOCUMENTS (including Author, Title, Date, Place of Publication).

AA	Akopyan. T.N., et al., Cleavage of farnesylated COOH-terminal heptapeptide of mouse N-ras by brain microsomal membranes: evidence for a carboxypeptidase which specifically removes the COOH-terminal methionine. Biochem Biophys Res Commun. 1992. 187(3): p. 1336-42.
AB	Akopyan. T.N., et al., Proteolytic processing of farnesylated peptides: assay and partial purification from pig brain membranes of an endopeptidase which has the characteristics of E.C. 3.4.24.15. Biochem Biophys Res Commun. 1994. 198(2): p. 787-94.
AC	Ashby. M.N., D.S. King, and J. Rine, Endoproteolytic processing of a farnesylated peptide in vitro. Proc Natl Acad Sci U S A, 1992. 89(10): p. 4613-7.
AD	Ashby. M.N., et al., Isolation and DNA sequence of the STE14 gene encoding farnesyl cysteine: carboxyl methyltransferase. Yeast. 1993. 9(8): p. 907-13.
AE	Ashby. M.N. and J. Rine. Ras and a-factor converting enzyme. Methods Enzymol. 1995. 250: p. 235-51.
AF	Ashby. M.N., CaaX converting enzymes. Curr Opin Lipidol. 1998. 9(2): p. 99-102.
AG	Auffray. C., et al., GenBank Accession No. Z43273. 11 Nov 1994.
AH	Boyartchuk. V.L., M.N. Ashby, and J. Rine. Modulation of Ras and a-factor function by carboxyl-terminal proteolysis [see comments]. Science. 1997. 275(5307): p. 1796-800.
AI	Chen. Y., Y.T. Ma, and R.R. Rando. Solubilization, partial purification, and affinity labeling of the membrane-bound isoprenylated protein endoprotease. Biochemistry. 1996. 35(10): p. 3227-37.
AJ	Ding. J., et al., Farnesyl-L-cysteine analogs can inhibit or initiate superoxide release by human neutrophils. J Biol Chem. 1994. 269(24): p. 16837-44.

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AK	Dudler. T. and M.H. Gelb, Replacement of the H-Ras farnesyl group by lipid analogues: implications for downstream processing and effector activation in <i>Xenopus</i> oocytes. <i>Biochemistry</i> . 1997. 36(41): p. 12434-41.
AL	Farh, L., D.A. Mitchell, and R.J. Deschenes, Farnesylation and proteolysis are sequential, but distinct steps in the CaaX box modification pathway. <i>Arch Biochem Biophys</i> . 1995. 318(1): p. 113-21.
AM	Fujimura-Kamada, K., F.J. Nouvet, and S. Michaelis, A novel membrane-associated metalloprotease, Ste24p, is required for the first step of NH2-terminal processing of the yeast $\alpha$ -factor precursor. <i>J Cell Biol</i> . 1997. 136(2): p. 271-85.
AN	Georgopapadakou, N.H., et al., A radiometric assay for Ras-processing peptidase using an enzymatically radiolabeled peptide. <i>Anal Biochem</i> . 1994. 218(2): p. 273-7.
AO	Giner. J.L. and R.R. Rando, Novel methyltransferase activity modifying the carboxy terminal bis(geranylgeranyl)-Cys-Ala-Cys structure of small GTP-binding proteins. <i>Biochemistry</i> . 1994. 33(50): p. 15116-23.
AP	Gutierrez. L., et al., Post-translational processing of p21ras is two-step and involves carboxyl-methylation and carboxy-terminal proteolysis. <i>Embo J</i> . 1989. 8(4): p. 1093-8.
AQ	Hancock. J.F., K. Cadwallader, and C.J. Marshall, Methylation and proteolysis are essential for efficient membrane binding of prenylated p21K-ras(B). <i>Embo J</i> . 1991. 10(3): p. 641-6.
AR	Hancock. J.F., Reticulocyte lysate assay for in vitro translation and posttranslational modification of Ras proteins. <i>Methods Enzymol</i> . 1995. 255: p. 60-5.
AS	Hiwasa. T., T. Sawada, and S. Sakiyama, Synergistic induction of anchorage-independent growth of NIH3T3 mouse fibroblasts by cysteine proteinase inhibitors and a tumor promoter. <i>J Biol Chem</i> . 1996. 271(16): p. 9181-4.

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BA	Hrycyna, C.A. and S. Clarke, Maturation of isoprenylated proteins in <i>Saccharomyces cerevisiae</i> . Multiple activities catalyze the cleavage of the three carboxyl-terminal amino acids from farnesylated substrates in vitro. <i>J Biol Chem.</i> 1992. 267(15): p. 10457-64.
BB	Hrycyna, C.A. and S. Clarke, Purification and characterization of a novel metalloendopeptidase from <i>Saccharomyces cerevisiae</i> . <i>Biochemistry</i> , 1993. 32(42): p. 11293-301.
BC	Jang, G.F., K. Yokoyama, and M.H. Gelb, A prenylated protein-specific endoprotease in rat liver microsomes that produces a carboxyl-terminal tripeptide. <i>Biochemistry</i> , 1993. 32(36): p. 9500-7.
BD	Jang, G.F. and M.H. Gelb, Substrate specificity of mammalian prenyl protein-specific endoprotease activity [published erratum appears in <i>Biochemistry</i> 1998 Apr 14;37(15):5336]. <i>Biochemistry</i> , 1998. 37(13): p. 4473-81.
BE	Kato, K., et al., Isoprenoid addition to Ras protein is the critical modification for its membrane association and transforming activity. <i>Proc Natl Acad Sci U S A.</i> 1992. 89(14): p. 6403-7.
BF	Ma, Y.T., A. Chaudhuri, and R.R. Rando. Substrate specificity of the isoprenylated protein endoprotease. <i>Biochemistry</i> , 1992. 31(47): p. 11772-7.
BG	Ma, Y.T. and R.R. Rando, A microsomal endoprotease that specifically cleaves isoprenylated peptides. <i>Proc Natl Acad Sci U S A.</i> 1992. 89(14): p. 6275-9.
BH	Ma, Y.T., B.A. Gilbert, and R.R. Rando. Inhibitors of the isoprenylated protein endoprotease [published erratum appears in— <i>Biochemistry</i> 1993 Jun 8;32(22):5924]. <i>Biochemistry</i> , 1993. 32(9): p. 2386-93.
BI	Ma, Y.T. and R.R. Rando. Endoproteolysis of non-CAAX-containing isoprenylated peptides. <i>FEBS Lett.</i> 1993. 332(1-2): p. 105-10.
BJ	Ma, Y.T., et al., Mechanistic studies on human platelet isoprenylated protein methyltransferase: farnesylcysteine analogs block platelet aggregation without inhibiting the methyltransferase. <i>Biochemistry</i> , 1994. 33(18): p. 5414-20.

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## OTHER DOCUMENTS (including Author, Title, Date, Place of Publication).

BK	Maura, M., et al., GenBank Accession No. W14344, 10 Sep 1996.
BL	Nishii, W., et al., Partial purification and characterization of a CAAX-motif-specific protease from bovine brain using a novel fluorometric assay. J Biochem (Tokyo), 1997. 122(2): p. 402-8.
BM	Parish, C.A., D.P. Brazil, and R.R. Rando, On the mechanism of the inhibition of transducin function by farnesylcysteine analogs. Biochemistry, 1997. 36(9): p. 2686-93.
BN	Perez-Sala, D., et al., Analogs of farnesylcysteine induce apoptosis in HL-60 cells. FEBS Lett, 1998. 426(3): p. 319-24.
BO	Powers, S., et al., "RAM, a Gene of Yeast Required for a Functional Modification of RAS Proteins and for Production of Mating Pheromone a-Factor." Cell, 1986. 47:413-422.
BP	Rando, R.R. and Y.T. Ma, Isoprenylated protein endopeptidase. Methods Enzymol, 1994. 244: p. 632-9.
BQ	Schmidt, W.K., et al., Endoplasmic reticulum membrane localization of rce1p and ste24p, yeast proteases involved in carboxyl-terminal CAAX protein processing and amino-terminal a-factor cleavage [In Process Citation]. Proc Natl Acad Sci U S A, 1998. 95(19): p. 11175-80.
BR	Shi, Y.Q. and R.R. Rando, Kinetic mechanism of isoprenylated protein methyltransferase. J Biol Chem, 1992. 267(14): p. 9547-51.
BS	Tam, A., et al., Dual roles for Ste24p in yeast a-factor maturation: NH2-terminal proteolysis and COOH-terminal CAAX processing. J Cell Biol. 1998. 142(3): p. 635-49.
CA	Tan, E.W. and R.R. Rando, Identification of an isoprenylated cysteine methyl ester hydrolase activity in bovine rod outer segment membranes. Biochemistry, 1992. 31(24): p. 5572-8.
CB	Fujiyama, A., et al., A novel yeast mutant defective in the processing of ras proteins: assessment of the effect of the mutation on processing steps, EMBO J., Vol. 6, No. 1, p. 223-228
CC	Sass, P., et al., Cloning and characterization of the high-affinity cAMP phosphodiesterase of <i>S. cerevisiae</i> , PNAS USA, 1986, 83:9303-9307

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